

What is claimed is:

- 1 1. A method for determining a target lifetime for a physical vapor deposition tool,  
2 comprising the steps of:  
3 selecting criteria for a minimum accumulating rate of  $\Delta$  wafers fabricated by  $\Delta$  target life  
4 for a target in the tool;  
5 recording actual values of  $\Delta$  wafers fabricated by  $\Delta$  target life for a target in the tool;  
6 for a time period;  
7 comparing a calculated, reported accumulating rate with a calculated, minimum  
8 accumulating rate, and  
9 checking the condition of the target in the tool, and deciding whether to replace the  
10 target, when the reported accumulating rate is less than the minimum accumulating rate.
- 1 2. The method of claim 1, and further comprising the steps of: recording the criteria in a  
2 table for multiple targets in respective multiple ones of the tool; and  
3 selecting the criteria by retrieving the criteria from the table.
- 1 3. The method of claim 1, and further comprising the step of: generating an alarm when the  
2 reported accumulating rate is less than the minimum accumulating rate.
- 1 4. The method of claim 1 wherein, the step of selecting criteria for a minimum  
2 accumulating rate, further comprises the step of selecting the criteria of thinnest wafers  
3 fabricated by the tool for a minimum accumulating rate of  $\Delta$  thinnest wafers fabricated by  $\Delta$   
4 target life for a target in the tool.
- 1 5. The method of claim 4, and further comprising the step of: recording the criteria in a  
2 table for multiple targets in respective multiple ones of the tool.
- 1 6. The method of claim 4, and further comprising the step of: generating an alarm when the  
2 reported accumulating rate is less than the minimum accumulating rate.

1 7. The method of claim 1 wherein, the step of comparing a calculated reported accumulating  
2 rate with a calculated, minimum accumulating rate, further comprises the step of comparing a  
3 graph of the reported accumulating rate with a slope of the minimum accumulating rate for one  
4 KWH of tool power.

1 8. The method of claim 7, and further comprising the step of: generating an alarm when the  
2 graph has a slope that is less than the slope of the minimum accumulating rate for one KWH of  
3 tool power.

1 9. The method of claim 7, and further comprising the step of: recording the criteria in a  
2 table for multiple targets in respective multiple ones of the tool.

1 10. The method of claim 7, and further comprising the step of: generating an alarm when the  
2 reported accumulating rate is less than the minimum accumulating rate.

1 11. The method of claim 7 wherein, the step of selecting criteria for a minimum  
2 accumulating rate, further comprises the step of selecting the criteria of thinnest wafers  
3 fabricated by the tool for a minimum accumulating rate of  $\Delta$  thinnest wafers fabricated by  $\Delta$   
4 target life for a target in the tool.

1 12. A system for determining a lifetime of a target for a physical vapor deposition tool,  
2 comprising:

3 a mapping table of criteria for a minimum accumulating rate of  $\Delta$  wafers fabricated by  $\Delta$   
4 target life for a target in the tool;

5 a database recording  $\Delta$  wafers fabricated by  $\Delta$  target life for a target in the tool;

6 a computer retrieving the criteria from the mapping table and entering the criteria in the  
7 database; and

8 the tool reporting  $\Delta$  wafers fabricated by  $\Delta$  target life for a target in the tool for  
9 comparison with the criteria.